



November 22, 2024

#5333742

Mr. Abraham Chaparro, Solid Waste Director
Roswell Municipal Landfill
3006 West Brasher Road
Roswell, New Mexico 88203
a.chaparro@roswell-nm.gov

RE: Landfill Erosion Inspection Report, Roswell Municipal Landfill, Chaves County, New Mexico

Dear Mr. Chaparro:

Souder, Miller & Associates (SMA) is pleased to submit this letter report detailing observed erosional damage at the Roswell Municipal Landfill in Chaves County, New Mexico resulting from the October 19, 2024 high intensity precipitation event. Observations were made during a site visit conducted at the facility on October 29, 2024.

1.0 Introduction

On October 19, 2024, much of the City of Roswell and the surrounding area was impacted by a precipitation event which produced over 5.5 inches of rain within a 24-hour period. The precipitation resulted in widespread flooding in areas of the City and resulted in significant erosion and stormwater ponding at the landfill. A summary of identified damage and areas requiring repair observed during an inspection conducted by Scott McKittrick, P.G., and Matthew Earthman, P.G. of SMA on October 29, 2024 is detailed below. A site map with the location of closed and active landfill cells is included as Figure 1, photographs of identified features are included in Attachment A, and a preliminary estimate of impacted areas and quantities of material needed for repairs is included as Table 1 (Section 3.0).

2.0 Site Inspection

The site inspection conducted on October 29, 2024 included visual inspection of all closed and active landfill units at the Roswell Municipal Landfill.

2.1 Closed Unit 1

The inspection of the closed Unit 1 cell identified significant and widespread erosion to the sidewalls of the cell. Cover material appears to have been removed in many places to a depth in excess of two feet, revealing portions of black, geotextile material in at least six different locations on the north and south-facing side slopes. The geotextile material appears to be a permeable fabric which was placed below the vegetative topsoil above the low-permeability cap. However, outside of the four areas of major erosion, the majority of damage is limited to rills and smaller channels with depths less than one foot. No encapsulated solid waste material appears to have been uncovered because of the erosion. The top of the landfill cap above side slopes appeared to be in good condition with no evidence of erosion or channel development. Photographs of erosion on Unit 1 are included as Photographs 1-3 in Attachment A.

2.2 Closed Unit 2

The inspection of the closed Unit 2 identified significant and wide-spread erosion to the sidewalls of the cell, much like what has occurred in Unit 1. Cover material appears to have been removed in many places to a depth in excess

of two feet, revealing portions of black, geotextile material located below the upper top soil/vegetative cover at two locations. However, outside of the four areas of major erosion, the majority of damage is limited to rills and smaller channels with depths less than one foot. No encapsulated solid waste material appears to have been uncovered as a result of the erosion. The top of the landfill cap above side slopes appeared to be in good condition with no evidence of erosion or channel development. Photographs of erosion on Unit 2 are included as Photographs 4-5.

2.3 Closed Unit 3

The inspection of the closed Unit 3 cell identified significant and widespread erosion throughout the cell cover (Photograph 6, 7). Rills and channels have developed over the majority of the cover, and in some cases have depths exceeding two feet. Some erosional channels were of sufficient depth to reveal the underlying, compacted clay layer which functions as the low-permeability cover for the unit (Photograph 8); however, SMA did not observe any obvious or significant erosion to the clay layer. The stormwater drainage channels graded atop the cover have been damaged (Photograph 9) and will need to be re-formed to ensure efficient, future drainage of the cell. No encapsulated solid waste material appears to have been uncovered as a result of the erosion.

2.4 Inactive Unit 4 (Interim Cover)

The inspection of the Unit 4 cell identified significant and widespread erosion throughout the cell cover, primarily within sidewall slopes. Erosion on unit four was generally limited to channels/rills less than 1-foot deep. One area on the north-facing slope of the unit has been sufficiently eroded to expose buried solid waste material (Photograph 10); however the material appeared to be in-place and no waste appeared to have been mobilized. One area within the eastern-facing side slope has exposed the liner and anchor trench of the Unit 5A cell (Photograph 11). The liner, although exposed, appeared to be in good condition with no signs of damage.

2.5 Unit 5A

SMA did not observe any significant erosion or damage to the active 5A cell. As described in Section 2.4, erosion on the eastern face of Unit 4 exposed a small area of the Unit 5A liner near the anchor trench (Photograph 11) and an area of liner was also exposed near the southwest corner of the cell near the liner tie-in with Unit 4 (Photograph 12). The area of the liner which has been exposed is limited and the liner appeared to be undamaged. As Unit 5A is actively being utilized for waste disposal, any other erosion that occurred on the footprint of the cell will be repaired during daily cover activities.

3.0 Recommended Repairs

SMA did not observe any damage to cell liners or low-permeable clay caps/covers on any unit at the Roswell Municipal Landfill. As such, SMA believes re-grading of the units to fill erosional channels and cover any exposed liner should be sufficient to repair the cover and mitigate potential impacts to the cover by future precipitation events. The re-grading should be completed on all side slopes of Units 1, 2, and 3, and should be completed on the entirety of Unit 4. Re-grading should be followed by re-seeding of native grasses on Units 1-3 to provide additional stability for the cover.

In addition to the landfill unit/cell repairs, SMA also recommends the repair, replacement, or construction of stormwater swales throughout portions of the landfill to help direct stormwater flow. SMA recommends that swales be repaired around each of the closed or active landfill units, along the southern boundary of the landfill,

and north of the Unit 1/Unit 3 to help direct water flow to the stormwater retention pond located on the northeast corner of the facility (Figure 1).

Table 1 below includes preliminary estimates of the area requiring re-grading at each landfill unit/cell, volumes of material which will need to be placed to accommodate re-grading, and an estimate of linear footage of stormwater swales which will need to be repaired/constructed to help direct future stormwater flows.

Table 1 – Estimated Repair Areas and Volumes

Unit	Area Earthwork Required (acres)	Estimated Volume of Material needed (cubic yards)	Area Reseeding Required (acres)
Unit 1	14.6	2,400	16.0
Unit 2	15.5	2,500	17.0
Unit 3	21.5	3,500	21.5
Unit 4	10.3	1,700	N/A
Stormwater Swale Repair - Linear Feet (LF)			
Swales	24,300 LF		

Notes & Assumptions:

- Re-Grading acreage estimate for Units 1, 2, and 3 includes entire area of side slopes for each cell. Re-grading estimate for Unit 4 includes entire unit.
- Re-seeding acreage estimates for Units 1 and 2 include area of side slopes plus an additional 10% area to allow for re-seeding near slope shoulders. Re-seeding for Unit 3 includes the area of the entire unit.
- Volume estimates for material needed for repairs were determined with the following assumptions:
 - Approximately 10% of acreage proposed for re-grading will need to be filled with imported material because of erosion/channeling.
 - The average depth of channeling/riling is one foot.

Please feel free to contact me if you have questions or require additional information. I can be reached at 505.595.7813 or scott.mckitrick@soudermiller.com. SMA appreciates the opportunity to provide you with environmental services.

Sincerely,

MILLER ENGINEERS, INC. D/B/A
SOUDER, MILLER & ASSOCIATES

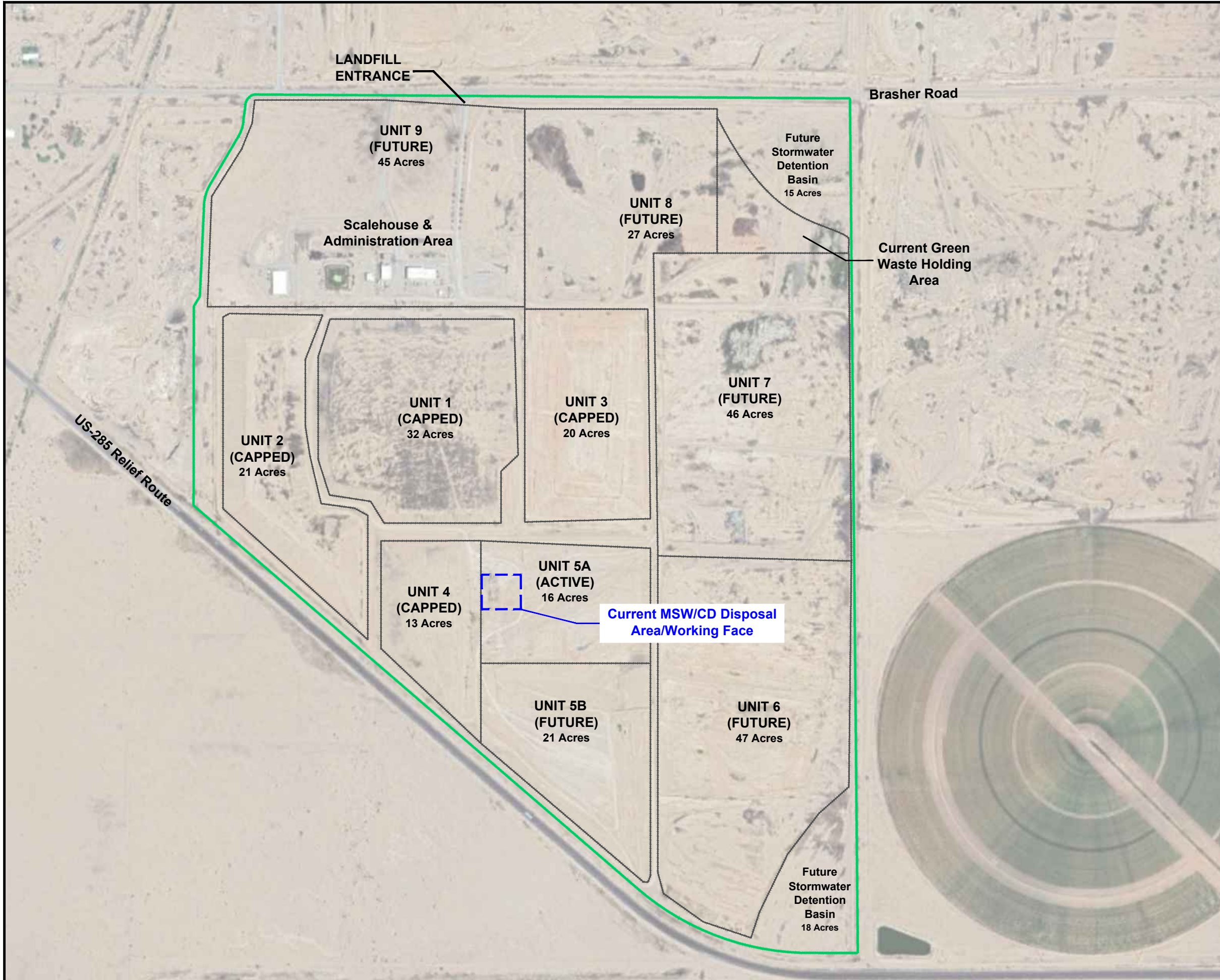


Scott A. McKitrick, P.G.
Principal Geoscientist / Environmental Technical Sector Director

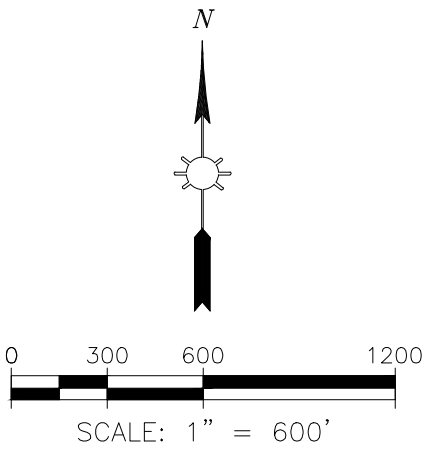
Enclosures:

Figure 1. Site Map
Attachment A: Photographic Log (October 29, 2024 Inspection)

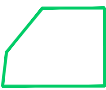
FIGURE 1 – SITE MAP



Aerial Photo from Google Earth (2024)



LEGEND

-  APPROXIMATE LANDFILL BOUNDARY
-  ACTIVE DISPOSAL FACE (UNIT 5A)

SITE MAP WITH UNIT LOCATIONS
ROSWELL MUNICIPAL LANDFILL
ROSWELL, CHAVES COUNTY, NEW MEXICO

SOUDER, MILLER & ASSOCIATES
3451 CANDELARIA ROAD NE, SUITE D
ALBUQUERQUE, NM 87107
Phone (505) 299-0942 Fax (505) 293-3430
www.soudermiller.com
Serving the Southwest & Rocky Mountains
Albuquerque, Farmington, Las Cruces, Roswell, Santa Fe, NM - El Paso, TX
Cortez - Grand Junction - Montrose, CO - Salt Lake City, UT



Designed MAE	Drawn MAE	Checked SAM
-----------------	--------------	----------------

THIS DRAWING IS INCOMPLETE
AND NOT TO BE USED FOR
CONSTRUCTION UNLESS IT IS
STAMPED, SIGNED AND DATED

Date:	NOV. 2024
Scale: Horiz:	1"=600'
Vert:	N/A
Project No:	4422745
Sheet:	Fig. 1

ATTACHMENT A – October 29, 2024 Photographic Log



Photo 1. Geotextile exposed along northern side slope of Unit 1 Cell



Photo 2. Geotextile underlying vegetative top cover on northern Unit 1 slope

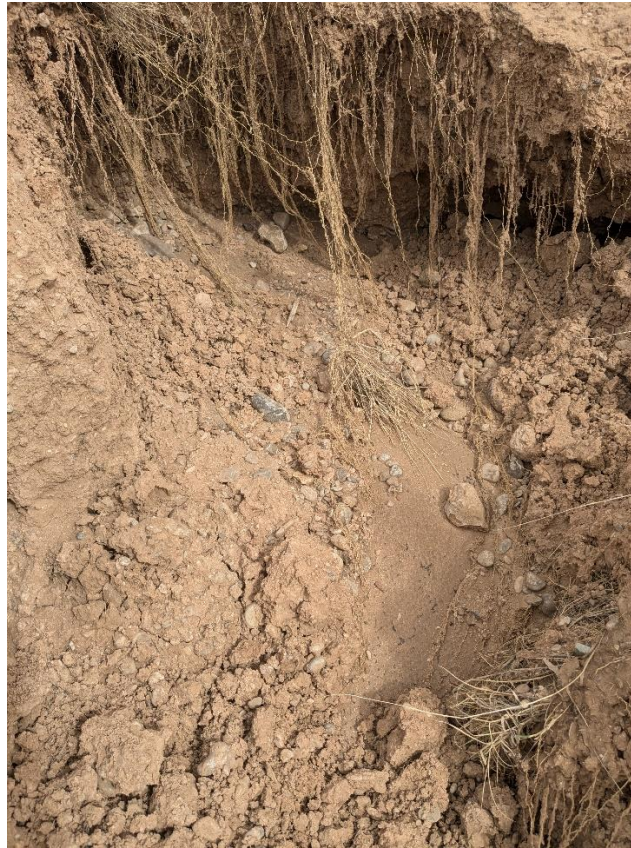


Photo 3. Erosion and geotextile on Unit 1 southern slope



Photo 4. Erosion and Rilling with exposed geotextile along Unit 2 side slope



Photo 5. Geotextile exposed near base of Unit 2 side slope



Photo 6. Erosion and Rilling along Unit 3 side slope



Photo 7. Erosional channels on western-facing side slope of Unit 3 side slope



Photo 8. Exposed compacted clay layer, Unit 3 side slope



Photo 9. Damage to existing graded stormwater flow path atop Unit 3.



Photo 10. Channel and erosion of buried waste material on the northern face of Unit 4.



Photo 11. Anchor Trench of Unit 5A liner exposed on Unit 4 eastern-facing side slope



Photo 12. Exposed Unit 5A liner southwest of tie-in with Unit 4